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### 1 [The impact of object technology on commercial transaction processing](#)

Edward E. Cobb

 August 1997 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 6 Issue 3

Publisher: Springer-Verlag New York, Inc.

 Full text available: [pdf\(649.17 KB\)](#)

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Businesses today are searching for information solutions that enable them to compete in the global marketplace. To minimize risk, these solutions must build on existing investments, permit the best technology to be applied to the problem, and be manageable. Object technology, with its promise of improved productivity and quality in application development, delivers these characteristics but, to date, its deployment in commercial business applications has been limited. One possible reason is the ...

**Keywords:** Objects, Workflow, transaction processing

### 2 [Exotica: a project on advanced transaction management and workflow systems](#)



C. Mohan, D. Agrawal, G. Alonso, A. El Abbadi, R. Guenthoer, M. Kamath

 August 1995 **ACM SIGOIS Bulletin**, Volume 16 Issue 1

Publisher: ACM Press

 Full text available: [pdf\(781.89 KB\)](#)

 Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

This paper is an overview of the Exotica project, currently in progress at the IBM Almaden Research Center. The project aims at exploring several research areas from advanced transaction management concepts to client/server architectures and mobile computing within the context of business processes and workflow management. The ultimate goal is to incorporate these ideas into IBM's products and prototypes. The project involves IBM groups in Almaden (U.S.A.), Hursley (U.K.), Boeblingen (Germany), ...

### 3 [Failure isolation and recovery in composite multidatabases](#)

Dexter P. Bradshaw

 October 1994 **Proceedings of the 1994 conference of the Centre for Advanced Studies on Collaborative research**

Publisher: IBM Press

 Full text available: [pdf\(193.89 KB\)](#)

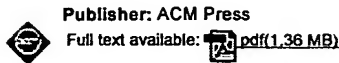
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Most concurrency control schemes for guaranteeing global serializability in composite multidatabase systems are susceptible to rollbacks. Conservative schemes generate rollbacks because of transaction timeouts, while those of optimistic schemes are caused by certification failures. Typically, rollbacks on any branch of a flat distributed transaction cause a global abort. Global aborts during multidatabase composition degrade performance because of a waste of resources and reductions in multidata ...

### 4 [OSI distributed transaction processing commitment optimizations](#)

Richard Banks, Peter Furniss, Klaus Heien, H. Rüdiger Wiehle

 October 1998 **ACM SIGCOMM Computer Communication Review**, Volume 28 Issue 5



Publisher: ACM Press

Full text available: pdf(1.36 MB)

Additional Information: [full citation](#), [abstract](#), [index terms](#)

This paper briefly summarizes the work towards the final version of 'Distributed Transaction Processing' (OSI TP). Several well-known optimizations of the presumed abort protocol are introduced: dynamic flow of READY-messages, a one-phase protocol, a read-only extension. Moreover, some useful extensions such as containment of heuristic decisions and reporting of the completion status of a transaction are presented. The requirements and the functionality are discussed especially from the user's p ...

5 Distributed transaction management: Composite multidatabase system concurrency control and recovery

Dexter P. Bradshaw

October 1993

**Proceedings of the 1993 conference of the Centre for Advanced Studies on Collaborative research: distributed computing - Volume 2**

Publisher: IBM Press

Full text available: pdf(1.08 MB)

Additional Information: [full citation](#), [abstract](#), [references](#)

Multidatabase systems based on single monolithic multidatabase servers are not realistic and do not scale with increases in the number of participant component database systems and the radius of service. In this paper, we focus on an architecture in which the multidatabase system consists of multiple, possibly heterogeneous peer servers distributed on a communication network. A global multidatabase request can span multiple servers, causing some servers to act as component database systems. We r ...

6 Transactors: a programming model for maintaining globally consistent distributed state in unreliable environments

John Field, Carlos A. Varela

January 2005

**ACM SIGPLAN Notices , Proceedings of the 32nd ACM SIGPLAN-SIGACT symposium on Principles of programming languages POPL '05, Volume 40 Issue 1**

Publisher: ACM Press

Full text available: pdf(410.58 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#), [review](#)

We introduce *transactors*, a fault-tolerant programming model for composing loosely-coupled distributed components running in an unreliable environment such as the internet into systems that reliably maintain globally consistent distributed state. The transactor model incorporates certain elements of traditional transaction processing, but allows these elements to be composed in different ways without the need for central coordination, thus facilitating the study of distributed fault-toler ...

**Keywords:** actor, distributed state, tau-calculus, transactor

7 Systems and prototypes: Phoenix project: fault-tolerant applications

Roger Barga, David Lomet

June 2002

**ACM SIGMOD Record, Volume 31 Issue 2**

Publisher: ACM Press

Full text available: pdf(847.56 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

After a system crash, databases recover to the last committed transaction, but applications usually either crash or cannot continue. The Phoenix purpose is to enable application state to persist across system crashes, transparent to the application program. This simplifies application programming, reduces operational costs, masks failures from users, and increases application availability, which is critical in many scenarios, e.g., e-commerce. Within the Phoenix project, we have explored how to ...

8 Providing fault-tolerant services to distributed Ada 95 applications

Yvon Kermarrec, Laurent Nana, Laurent Pautet

December 1996



**Proceedings of the conference on TRI-Ada '96: disciplined software development with Ada**

Publisher: ACM Press



Full text available: pdf(837.05 KB)

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9 IBM's relational DBMS products: features and technologies

-  C. Mohan  
June 1993 **ACM SIGMOD Record , Proceedings of the 1993 ACM SIGMOD international conference on Management of data SIGMOD '93**, Volume 22 Issue 2  
Publisher: ACM Press  
Full text available:  [pdf\(535.42 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)



This paper very briefly summarizes the features and technologies implemented in the IBM relational DBMS products. The topics covered include record and index management, concurrency control and recovery methods, commit protocols, query optimization and execution techniques, high availability and support for parallelism and distributed data. Some indications of likely future product directions are also given.

- 10 Transaction scheduling in dynamic composite multidatabase systems   
Dexter P. Bradshaw, Per-Åke Larson, Jacob Slonim  
November 1995 **Proceedings of the 1995 conference of the Centre for Advanced Studies on Collaborative research**  
Publisher: IBM Press  
Full text available:  [pdf\(317.09 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper proposes composite multidatabase architecture consisting of multiple, possibly heterogeneous, peer multidatabase servers distributed on a communications network. The domain of each multidatabase server is treated as a multidatabase cell. Global transactions could span multiple multidatabase cells, sometimes forcing multidatabase servers to act as component database systems. Although each multidatabase server guarantees serializable execution histories for transactions under its contro ...



- 11 Strategies for integrating messaging and distributed object transactions   
Stefan Tai, Isabelle Rouvellou  
April 2000 **IFIP/ACM International Conference on Distributed systems platforms**  
Publisher: Springer-Verlag New York, Inc.  
Full text available:  [pdf\(460.54 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

Messaging, and distributed transactions, describe two important models for building enterprise software systems. Distributed object middleware aims to support both models by providing messaging and transaction services. But while the concept of distributed object transactions is well-understood, support for messaging in distributed object environments is still in its early stages, and not nearly as readily perceived. Integrating messaging into distributed object environments, and in particula ...

- 12 PicoDBMS: Scaling down database techniques for the smartcard   
Philippe Pucheral, Luc Bouganim, Patrick Valduriez, Christophe Bobineau  
September 2001 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 10 Issue 2-3  
Publisher: Springer-Verlag New York, Inc.  
Full text available:  [pdf\(259.03 KB\)](#) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

Smartcards are the most secure portable computing device today. They have been used successfully in applications involving money, and proprietary and personal data (such as banking, healthcare, insurance, etc.). As smartcards get more powerful (with 32-bit CPU and more than 1 MB of stable memory in the next versions) and become multi-application, the need for database management arises. However, smartcards have severe hardware limitations (very slow write, very little RAM, constrained stable mem ...



**Keywords:** Atomicity, Durability, Execution model, PicoDBMS, Query optimization, Smartcard applications, Storage model

- 13 Distinguished database profiles: C. Mohan speaks out: on R\*, message queues, computer science in India, how ARIES came about, life as an IBM fellow, and more   
Marianne Winslett  
December 2004 **ACM SIGMOD Record**, Volume 33 Issue 4  
Publisher: ACM Press  
Full text available:  [pdf\(238.97 KB\)](#) Additional Information: [full citation](#)



- 14 Enterprise information architectures—they're finally changing

-  Wesley P. Melling  
May 1994 **ACM SIGMOD Record , Proceedings of the 1994 ACM SIGMOD international conference on Management of data SIGMOD '94**, Volume 23 Issue 2  
**Publisher:** ACM Press  
Full text available:  pdf(1.28 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)



Substantive changes in the business environment—and aggressive initiatives in business process reengineering—are driving corresponding changes in the information technology architectures of large enterprises. Those changes are enabled by the convergence of a long list of maturing new technologies. As one of its many implications, the new IT architecture demands revised assumptions about the design and deployment of databases. This paper reviews the components of the architecture ...

- 15 Distributed transactions in practice  
 Prabhu Ram, Lyman Do, Pamela Drew  
September 1999 **ACM SIGMOD Record**, Volume 28 Issue 3  
**Publisher:** ACM Press  
Full text available:  pdf(873.01 KB) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

The concept of transactions and its application has found wide and often indiscriminate usage. In large enterprises, the model for distributed database applications has moved away from the client-server model to a multi-tier model with large database application software forming the middle tier. The software philosophy of "buy and not build" in large enterprises has had a major influence by extending functional requirements such as transactions and data consistency throughout th ...

- 16 STDL: a route to productivity for distributed processing  
 H. Lowe, E. Newcomer, J. Sekine  
December 1996 **StandardView**, Volume 4 Issue 4  
**Publisher:** ACM Press  
Full text available:  pdf(302.91 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Structured Transaction Definition Language (STDL) is a standardized, block-structured, high-level language that provides a development environment for writing portable, distributed transactional, and nontransactional applications. It has been mapped to the major TP monitors and is compatible with DCE. STDL's common API for distributed TP provides both portability across different TP monitors and enhances productivity through the usual benefits of high-level languages augmented with automate ...

- 17 SQL/CLI—a new binding style for SQL  
 Murali Venkatrao, Michael Pizzo  
December 1995 **ACM SIGMOD Record**, Volume 24 Issue 4  
**Publisher:** ACM Press  
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# 1 [Strategies for integrating messaging and distributed object transactions](#)

Stefan Tai, Isabelle Rouvellou

April 2000

**IFIP/ACM International Conference on Distributed systems platforms**

Publisher: Springer-Verlag New York, Inc.

Full text available: pdf(460.54 KB)

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# 2 [PicoDBMS: Scaling down database techniques for the smartcard](#)

Philippe Pucheral, Luc Bouganim, Patrick Valduriez, Christophe Bobineau

September 2001

**The VLDB Journal — The International Journal on Very Large Data Bases,**

Volume 10 Issue 2-3

Publisher: Springer-Verlag New York, Inc.

Full text available: pdf(259.03 KB)

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Smartcards are the most secure portable computing device today. They have been used successfully in applications involving money, and proprietary and personal data (such as banking, healthcare, insurance, etc.). As smartcards get more powerful (with 32-bit CPU and more than 1 MB of stable memory in the next versions) and become multi-application, the need for database management arises. However, smartcards have severe hardware limitations (very slow write, very little RAM, constrained stable mem ...

**Keywords:** Atomicity, Durability, Execution model, PicoDBMS, Query optimization, Smartcard applications, Storage model

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